

REVIEW ARTICLE

Surgical Oncology of the Pelvis: Ostomy Planning and Management

KATHLEEN L. POTTER, RN, BSN, COCN*

Johns Hopkins Medical Institutions, Baltimore, Maryland

Advanced pelvic surgery may result in the formation of a colostomy, ileostomy, urostomy, or multiples of these stomas. Stomas may be created because of a planned therapeutic attack to eradicate cancer or manage complications arising from treatments or they may be constructed to palliate severe symptoms or life-threatening problems. In some instances, fistulae between various organs and the skin may occur. Special skills are required to meet the needs of patients with ostomies or fistulae. The often complex care presents critical challenges to nurses, particularly in today's cost-conscious health care environment where prompt hospital discharges, brief clinic appointments, and valuable but limited home care visits are the norm. The skills of the enterostomal therapy nurse are valuable in all phases of care of these patients, from preoperative to outpatient care.

J. Surg. Oncol. 2000;73:237–242. © 2000 Wiley-Liss, Inc.

KEY WORDS: ostomy; cancer; planning; management

PREOPERATIVE PREPARATION

Although it is not always possible, preoperative preparation for ostomy surgery is important and usually speeds and contributes positively to the rehabilitation. The time between receiving the news of the need for an ostomy and the actual time of the surgery is difficult. Simple facts, basic practical information, and clearing up misconceptions are helpful to patients. Most patients are not ready to absorb all the details of ostomy care. However, developing a rapport between the patient and the care giver who will provide the postoperative care is valuable. The information covered should be based on how much the patient is ready to hear and the questions asked. A question often posed in the nursing preoperative visit is: What did your doctor tell you about the surgery? This will elicit information on what the patient has understood thus far. A diagram of the gastrointestinal or urinary tract helps patients visualize and review how their anatomy will be rerouted. The appearance of the stoma needs to be described to patients to prepare them for that first look after surgery. They need to know that it will be red, moist, and swollen, that it will shrink, bleed a little, have peristaltic movement, have no sphincter control, and will

not be painful. Patients usually want to know where the stoma will be, what the pouches look like, the simple basics of care, that clothing does not need to be changed, and that the stoma will not prevent previous daily activities. Some patients have numerous questions and others do not know what to ask.

The nursing preoperative visit is also a time for patient assessment. The primary goals of assessment are to determine the person's capabilities for satisfactorily managing the proposed ostomy and to identify any adverse factors that can be modified to make ostomy care easier. Is self-care possible? Are there physical or mental limitations to performing the ostomy care? A patient who is unable to handle a pair of scissors may do better with a precut pouch. Knowing patients' level of motivation to learn self-care and their most effective learning styles will shape the care giver's approach to patients after surgery. The patient's emotional state, the length of time that the diagnosis has been known, particular fears, ex-

*Correspondence to: Kathleen L. Potter, RN, BSN, Ostomy Nurse Specialist, Halsted 600, Johns Hopkins Hospital, 600 N. Wolfe St., Baltimore, MD 21287. Fax: (410) 955-7363.

Accepted 6 January 2000

pectations, and preconceived ideas are also guides. Employment, daily activities, living situation, family support, children, the financial/insurance situation are all factors involved in the assessment [1].

Simple pamphlets are used to reinforce the information discussed. Finally, the site is marked, first considering the type of stoma and where that portion of bowel most efficiently may be brought to the surface. Consideration is given to the patient's waistline, abdominal folds, the navel, any bony prominences, scars, previous stomas, and prosthetic devices. Examining the abdomen in various positions and talking with the patient help to determine the best placement. Of prime importance is that a pouch will adhere to the body under normal activity, such as bending, sitting, running, and bike riding. It also should be sited in a place that can be visualized well. There are a variety of methods used to keep the mark visible until that point in the surgery. One is to use an indelible marker with clear waterproof tape to cover the mark. A few patients benefit by wearing a pouch before surgery and most want to see and handle samples of pouches. This usually stimulates some questions.

The preoperative visit is an excellent time to discuss the plan for teaching self-care of the ostomy. Patients are reassured that with help they will be able to learn to empty and apply the pouch themselves, if that is, in fact, a reasonable expectation. It is normal for patients to feel helpless and to depend on others. However, with demonstration and practice of the techniques, self-care in many cases will eventually be possible. The level of cooperation is much greater when all these aspects are discussed before surgery. In cases of emergency surgery or when the stoma is unexpected, extra time is required to develop a rapport between teacher and student as surgical pain clouds everything.

COLOSTOMY CARE

The care giver needs to remember and include in the teaching the fact that colostomies vary. First, they are located in different parts of the colon. A right colostomy will function more frequently than a sigmoid colostomy with its usually pasty, less frequent movements. Also, any prior bowel resections will change what is normally expected to be the function of a particular stoma. A drawing of the intact intestine is helpful, as is a drawing of what has been resected and rerouted. Stomas are also constructed in different ways, for example, single barrel with or without a Hartmann pouch, double barrel, or loop. There is a clearer understanding of what to expect and how to care for the colostomy if this is understood by the patient. Whether the stoma is temporary or permanent is also important information.

Normal features of any stoma are re-explained post-operatively. Stomas stay red in color, they bleed slightly from the mucosa surface, sutures surround it, and

they are swollen at first and gradually shrink in size (one third to one half smaller) after a period of 6–8 weeks. There is no sensory feeling in the stoma and some are flat and some protrude. Colon function resumes after surgery at varying speeds depending on the amount of surgery done, the location of the colostomy, the patient's immobility after surgery, and the quantity and type of pain medication administered. For example, it is not unusual for an immobile person with a sigmoid colostomy to lack bowel function for a week after surgery.

Eating is gradually resumed after a colostomy and there are usually no forbidden foods. Foods have individual effects on the colostomy. Often, a large amount of gas is passed in the initial weeks after surgery. This usually subsides unless a large amount of a gaseous food is eaten. Colostomies higher in the colon tend to produce more gas long term.

Patients need to learn how to empty and apply the pouch, and, in some cases, how to irrigate the stoma. Most need to hear an explanation, watch how it is done, read a list of directions, and practice the procedure a few times with an experienced person first directing, then observing and providing reminders. Most find stoma care overwhelming at first and many believe that they will have to rely on someone else. However, with encouragement and step-by-step supportive teaching, they can master self-care. Of course, this does not include those who have physical or mental impairments that may prevent self-care.

Choosing a pouch involves determining the one that will be the most secure, easy to apply, comfortable, available, and affordable. The enterostomal therapy (ET) nurse can often use her expertise to help patients select the best ones to try before making a choice. Joining a United Ostomy Association chapter is also a good idea. Patients receive newsletters and a quarterly magazine. They can also attend meetings and learn about new equipment, meet other persons with ostomies, and hear hints and tips for a smoother adjustment. Also available are visitors, experienced people with ostomies with whom they can identify or relate, who will call or visit in the home or hospital. Pouches are closed or open ended, precut or cut to fit, convex or flat, opaque or transparent, have varying adhesives, are two piece or one piece, of varying lengths and shapes, and are belted or nonbelted. Measuring the stoma and periodically changing the size of the pouch opening is an important part of teaching so that patients do not continue to wear "the size they gave me in the hospital." A pouch with an opening larger than the stoma will lead to skin irritation when stool contacts the skin.

Colostomy irrigation for the purpose of regulation of the bowel so that bowel movements occur on a schedule is an optional method of care for persons with lower bowel colostomies. Irrigation can be very helpful for

those who are able physically and mentally to do the procedure and who have good results, that is, the bowel empties promptly and completely when the irrigant is instilled. An irrigator filled with 500–1,000 ml tap water is hung up while the person is seated on the toilet. The water runs by gravity into the stoma using a cone tip through the top of an irrigating sleeve. The water and stool return completely within approximately 30 min. During this time, the patient is encouraged to get up and move about. The procedure is done at about the same time each day or every other day. When the bowel has emptied, this may be an opportune time for a shower or bath, after which a small covering such as a stoma cap is applied. It takes about 1–4 weeks of regular irrigating to establish a pattern of no stool between irrigations. An active person may be freed from wearing a longer pouch and from emptying two to three times a day at inconvenient times. Contraindications to regular colostomy irrigation are frequent stools due to extensive bowel resection, effects of chemotherapy or radiation, irritable bowel syndrome, physical or mental impairments, temporary colostomy, rehospitalizations with surgery or procedures, or patient preference to not irrigate.

Reassessment by the ET nurse is needed if the patient takes longer than 1 h to complete the irrigation, irrigates more than once per day, uses more than 1 L of irrigant, the intestines continue to function between irrigations (spillage), or if someone else must perform the procedure.

Individuals who are candidates for colostomy irrigation should have the procedure explained positively and have sufficient teaching by an experienced person, usually the ET nurse. Most patients need to actually do the irrigation step by step one or more times with the nurse. Follow-up support is also important. Many view irrigation as a drudgery prior to developing expertise with it and it does require several attempts to realize the value. It may be less threatening to try irrigation, if it is explained that the procedure may be stopped at any time if it does not make the care more convenient for the individual.

ILEOSTOMY CARE

Unlike most ileostomies for ulcerative colitis or Crohn disease, ileostomies for pelvic tumors are not usually anticipated in advance and are not viewed as a relief of disease. Rather, they are often formed relatively soon after the need is determined or on an emergency basis and may be palliative. In that case, the patient has less time to prepare emotionally and often faces this as an extension of life, not as a cure of disease. The care giver keeps this in mind when teaching the care of the ileostomy.

As with the colostomy, basic stoma information should be given. Stomas are red, bleed slightly, lack sen-

sory nerves, are edematous, shrink gradually, remain moist, and are sutured peristomally. Diagrams are helpful to explain the position in the gastrointestinal tract of this new diversion. No output is expected immediately after surgery. In 2 or 3 days, there is the passing of flatus and green liquid, which increases in consistency and becomes brown in color as solid food is introduced. A normal quantity of ileal output for someone with all of their small bowel intact is 800–1,200 ml per 24 h, requiring four to six emptyings each day.

Normally, the person with an ileostomy progresses from liquids after bowel function has resumed, to soft foods to regular food. For 4–6 weeks, it is best to avoid fibrous foods such as nuts, popcorn, mushrooms, skins of fruit, dried fruits, raw carrots, Chinese vegetables, fresh pineapple, celery, seeds, stalks of broccoli and the like in order to avoid food blockage. Patients with a normal stoma opening without narrowing may introduce the above foods slowly, one at a time, chewing them well and drinking fluids with them. In fact, all food should be chewed thoroughly and six to eight glasses of fluids each day are recommended.

An experienced ET nurse will guide patients in determining the type of pouch that suits them best. In general, pouches for ileostomies are drainable, seal securely for 3–7 days at a time, and the opening in the pouch or skin barrier fits snugly around the stoma so that stool will not contact the skin. There are a variety of brands of skin barriers and adhesives. Skin barriers do not reseal after they are lifted from the skin. Once there is a leak in the seal, it must be replaced after thorough cleansing of the skin with soap and warm water or plain water. Challenges arise when the stoma, after it has finished shrinking, does not protrude well above skin level or when the stoma is near scars, abdominal folds, bony prominences, other stomas, retention sutures, or drains. Then maintaining a secure seal, being active, and the potential of a healthy adjustment is affected. The addition of a paste, a belt, extra tape, convexity, a skin adhesive, cement, or an extra skin barrier may be needed. An experienced care giver will be able to anticipate which products will be helpful and which are superfluous. Step-by-step instructions on how to apply the pouch should be given verbally and in writing. Time for demonstration and guided practice, preferably more than once, is needed.

One may shower or tub bathe with the pouch on or off. Active work, swimming, participating in other sports, and having sexual relations are not prevented by the ileostomy itself. ET nurses also assist patients with information on how and where to obtain supplies. Gone are the days when patients had to pick out their own supplies on the way home from the hospital. Referrals for counseling or membership in the United Ostomy Association may also be made.

CONCERNS WITH FECAL STOMAS

Odor

It is best to choose an odorproof pouch. If the pouch is odorproof, the only time there should be odor is when the pouch is being emptied or changed. If there is odor at other times, this indicates that the pouch is not secure, there is an air leak, the bottom edge was not thoroughly cleaned where the clamp was reapplied, stool was spilled on clothing, or there is a defect in the pouch. If the odor is bothersome during stoma care, a room spray, oral pills, or deodorant placed in the pouch can be used. This is optional.

Leakage

The reason for the leakage must be discovered. Is it the technique of the person applying the pouch, the size of the pouch, too infrequent emptying of the pouch, or leaving a pouch on too long? Could the leakage be due to a crease, a scar, too flat a stoma, overlapping the pouch on to other tape, a moist or uneven area, irritated denuded skin, or the wrong type of pouch for this individual? Steps are then taken to correct the problem. It may be necessary to perfect techniques, remeasure the stoma and use the correct size, fill in with paste or add adhesive, use convexity, try an alternative pouch, or treat the skin irritation.

Skin Irritation

First, diagnose the reason for the irritation. Is it caused by *Candida*, an allergy to a product, the cleansing technique, pouch leakage, pressure, or a tape burn? *Candida* infection is treated with sparing application of nystatin powder. In the case of allergy, switch to another product. The patient may need to improve cleansing techniques, relieve some of the pressure or rubbing, or correct a leakage problem. Karaya powder applied to water-moistened skin will protect the irritated skin, absorb moisture, and aid in healing under a pouch. Peristomal skin in the radiation field should be cleansed gently, avoiding shaving, irritants, or excessive adhesives. Chronic skin changes resulting in thin, pink skin may be seen. Today, it is less common to see peristomal skin problems caused by radiation burns. With modern equipment, there is a skin-sparing effect of high-energy X-rays.

Mucocutaneous Separation

In the postoperative period, a separation may occur between the stoma and the skin where it had been sutured. This is usually frightening to the patient. However, as long as stool is not draining from a fistula in this area, reassurance can be given that this will heal. When the pouch is changed, the area should be cleaned gently and thoroughly. Karaya powder sprinkled into the crevice

will protect it from stool. If the separation is large and overly moist, a calcium alginate packing should be helpful. The pouch is then placed as usual over this area.

Stricture

A narrowing in the stoma opening may cause symptoms of painful passing of stool. Stool may be looser, liquid, or squirt from the stoma. It will be difficult or impossible to insert a small finger into the stoma. Dilating with a finger or a dilator on a regular basis may help in widening the opening, or a stoma revision may be necessary.

Mucosal Implants

There may be mucosal overgrowth onto the peristomal skin. This is usually treated with silver nitrate sticks, at times requiring repeated application. The opening in the pouch may need to be adjusted and paste or other adhesives may be required.

Peristomal Hernia

Support belts with an opening for the pouch are available. They relieve the discomfort of a hernia. It is important that the color of the stoma remain a healthy red and that there is normal bowel function. If symptoms are excessive, surgical repair may be necessary. In some cases, the stoma may need to be relocated to the opposite side of the abdomen.

Retraction

In cases where the stoma retracts below fascial level, surgical revision may be indicated. Less severe retractions are treated like a flush stoma, using convexity, additional adhesives, or alternative pouches. Karaya powder may be sprinkled in any open spaces between the skin and the stoma.

Prolapse

A prolapse may be reduced temporarily. However, once the patient is mobile, the bowel will prolapse again. Support belts with a prolapse flap are available and may help support and keep it reduced for a period of time. Stomas may prolapse several inches, but only cause great concern if the color of the stoma does not remain healthy or if bowel function is impaired.

Peristomal Fistula

Small bowel drainage may drain from the base of the stoma or from an opening near the stoma. If the fistula is very close to the stoma, widening the opening in the pouch may solve the problem. Additional adhesive such as paste or a spray adhesive may be needed because this is essentially a flush stoma. In the case of a fistula located an inch or two away from the stoma, a pouch with two

openings may be used. In other cases, the fistula may be pouched separately from the stoma.

Food Blockage

Ileostomy stomas may be blocked with a fibrous food such as raw carrots, popcorn, or nuts. Symptoms usually begin with small bowel obstruction symptoms of increased liquid output, abdominal cramps, pain, progressing to lack of ileostomy output and nausea and possible vomiting. With the early symptoms, the food may pass by increasing fluid intake, massaging the abdomen, or taking a warm bath or shower. With progressive symptoms, an abdominal X-ray, intravenous fluids, and a nasogastric tube may be needed. Gently inserting a soft catheter and irrigating with small amounts of saline may dislodge a food chunk near the stoma.

Constipation

The cause of the constipation should be determined. Similar remedies are used as for a person without a colostomy pouch, that is, diet and fluid modifications, stool softeners, laxatives, or irrigation.

Diarrhea

Diagnosing the cause of the diarrhea and treating accordingly are important. Is it bacterial, viral, a partial obstruction, a result of extensive bowel resection, or the effect of radiation or chemotherapy? Often, the ostomy pouch may not adhere as well in the presence of looser or liquid stool. A different type of pouch may be indicated or the addition of a paste, spray adhesive, or convexity. Temporarily, a more frequent pouch change or discontinuation of regular irrigation may be the answer until the diarrhea resolves.

Chemotherapy Effects

A low platelet count or inflammation and ulceration in the gastrointestinal tract from some chemotherapy drugs may cause the stoma to be friable and require more gentle care. Dilation or irrigation may need to stop and the type of pouch changed to prevent any friction on the stoma. Excessive stoma surface bleeding may be managed with gentle pressure, cold compresses, or silver nitrate sticks. Cleanliness is critical during chemotherapy, especially if there is a low white blood count. Disposable rather than reusable equipment may be indicated [1].

UROSTOMY CARE

A urinary stoma may be necessary because of malignancy, radiation damage, or fistula. Ileal or colonic conduits are the most common. Postoperatively, the procedure is reexplained using diagrams to show how the ureters are implanted in a segment of bowel, the proximal end of which is sutured closed and the distal end brought to the abdominal surface as a stoma. Most agree that the

care of a stoma that protrudes above skin level is less challenging than a flush stoma. There is a wider choice of pouches and adhesion is more reliable. Normal urinary stomas are edematous after surgery and shrink in diameter and length over a period of 6–8 weeks. Scant amounts of blood will be seen from the stoma mucosa. Mucous is present in the urine either as shreds in the urine or as a plug of mucous on the stoma wrapped around the stents. The patient needs to be reassured that this is not pus, but normal mucous secreted by the walls of the intestine used as a conduit. Stents are small-caliber catheters that protrude through the stoma lumen and extend through the ureteral anastomosis [2]. A red rubber catheter may also be sutured into the conduit. Because urine flows freely and frequently, securing a seal over a stoma with three drains extending from it requires manual dexterity, good vision, and quick action. Removal of these catheters makes it much easier for the patient to learn the pouch application. Until the patient is more mobile, the urinary pouch is connected to straight drainage as a second chamber for urinary collection. When the patient is able to empty the pouch, the straight drainage is detached and is only used at night if desired, to sleep uninterrupted. The drainage bottle or bag is placed at the end of the bed with the tubing running down the leg, allowing the patient to turn side to side without entanglement. During the day, the pouch may be emptied directly into the toilet through the urinary spout at the end of the pouch. Emptying is done approximately every 3–4 h. One-piece pouches are removed and replaced every 3–4 days in order to prevent infection. In the case of two-piece pouches, the wafer may adhere to the skin longer, as long as the pouch is detached from the wafer and replaced every 3–4 days. Some use a nonadhesive reusable system attached with a belt, which is removed and cleansed daily. Less commonly used is the reusable appliance with face plate and pouch and disposable double-faced adhesive. Pouches with antireflux built in are generally preferred as they prevent urine from refluxing to the stoma area. Many of the skin barriers such as karaya or pectin wafers used for fecal ostomies are ineffective. This is because urine causes them to wash out and the original opening in the pouch or wafer becomes much larger than when applied. This “washout” plus alkaline urine may cause severe skin problems. Hyperplasia or a thickened epithelium may result from alkaline urine on the skin, which can be gradually softened with full-strength vinegar soaks each time the pouch is changed. The urine should remain acidic and free of infection. The patient is taught to report signs and symptoms of infection such as odor, blood in the urine, or pain. To test for urinary infections, health care workers must not use urine from a pouch that has been on for a long time. Urine must be taken from either a pouch that has just been applied or from a sterile catheterization.

There should be no more than 30 ml of urine from catheterizing the stoma, as the bowel acts as a conduit rather than as a bladder. Patients with urinary stomas are taught to drink at least eight glasses of fluid per day. Some individuals are prescribed vitamin C in large doses to acidify the urine. Urine should flow freely from the stoma. Urine that squirts from the lumen may indicate a stenosis and a need for a surgical revision. *Candida* skin rash may occur peristomally and is treated with nystatin powder applied sparingly.

FISTULA CARE

Fistula development may occur after extensive pelvic surgery. Urinary, colonic, small bowel, gastric, pancreatic, or ascitic fluids may exit the skin at unexpected sites. If the drainage is excessive, more than 50 ml per day, containing it in a pouch will keep the patient dry, provide a measurement of the fluid, and protect the skin [3]. If the fistula location is in an area of even, flat skin and is of moderate size, it can be easily pouched as for ostomies using the same principles. The urostomy pouches connected to bedside drainage are helpful for liquid drainage. Large fistulae or those located within abdominal folds or near a bony prominence are quite challenging to pouch, but not impossible with the help of an ET nurse. Usually, the entire open wound must be pouched, not just the exit area of the fistula drainage. These wounds will granulate in spite of bowel drainage bathing them, as long as the patient receives adequate nutrition and sepsis is not present. A pouch may remain securely intact 2–7 days over wounds of this type. The goal should be skin protection, containment of the drainage, and patient comfort and mobility. Pouching should be started early in the fistula development so that the skin integrity may be maintained. It becomes much more difficult to secure the seal once the skin is denuded and weeping. Pouches specifically designed for large wounds are available. They feature a window on the front, which may be opened and closed for purposes such as examining the wound, debriding, or packing. The spigot opening on the bottom may be connected to straight drainage for high output.

Difficult fistulae may require trials of various products over many days to find the optimum method of pouching. The goal should be a pouch adherence of at least 2 days, preferably more. Use of powders, paste, skin sealants,

skin barriers, spray adhesive, cement, and belts added to various pouches help build up uneven areas, protect skin, and maintain a seal in the presence of highly corrosive drainage. Fistulae are very challenging to pouch because there is no protruding stoma to direct the effluent into the pouch and they occur in spontaneous sites, not in planned, premarked sites. As fistulae change in size, amount or consistency of output, the pouching regime may need to change. In difficult situations a catheter to suction may need to be laid in the wound, near the fistula opening to suck up some of the drainage, so that less strain is placed on the pouch. The catheter may be brought through a hole made in the front of the pouch and secured in a variety of ways, such as with tape or specially manufactured holding devices. ET nurses utilize a variety of techniques acquired through experience and trial and error to contain fistulae. Saddle bagging has been used in long horizontal wounds where two pouches are applied and are joined at the center, forming a common wall in the middle [3,4]. There are situations when a pouch will not adhere to a particular fistula. Dressings, Montgomery straps, a catheter with many holes and suction, and a solid skin barrier pieced around the wound to protect the skin may work better than daily removal of a leaking pouch.

CONCLUSION

Patients coping with cancer and an ostomy or fistula require careful assessment and skilled management. Self-care of the ostomy is usually the goal. However, in the case of oncology patients, this needs to be modified in the face of advancing cancer. Providing accurate information, skilled care of the stoma or fistula, supportive teaching, and help with establishing realistic goals and identifying coping strategies will positively influence the adaptation.

REFERENCES

1. Smith DB, Johnson DE (eds): "Ostomy Care and the Cancer Patient." Orlando: Grune & Stratton, Inc., 1986.
2. Petillo MH: The patient with a urinary stoma: Nursing management and patient education. *Nurs Clin North Am* 1987;22:263–279.
3. Dearlove JL: Skin care management of gastrointestinal fistulas. *Surg Clin North Am* 1996;76:1095–1109.
4. Bryant RA: Management of drain sites and fistulas. In Bryant RA (ed): "Acute and Chronic Wounds, Nursing Management." St. Louis: Mosby-Year Book, Inc., 1992:248–287.